

Studiomaster



P7 OWNER'S MANUAL

DO NOT CONNECT THE AC POWER LEAD UNTIL THIS SECTION HAS BEEN READ.

The P7 must only be used with a Studiomaster EP5 Power Supply Unit. Ensure that the EP5 supplied, is correct for the country in which the P7 is to be used.

EP5U - USA and Canada Only

EP5 - Europe etc. The EP5 is fitted with a voltage selector, check that the voltage is correct for your local A.C. power supply.

See Page 29 for correct fuse rating for each model.

WARNING : THIS APPARATUS MUST BE EARTHED (GROUNDED)

U.K. MAINS CONNECTIONS

The wires in the mains lead are wired in accordance with the following code:-

Green and Yellow.....Earth

BlueNeutral

BrownLive

Should the plug on the mains lead not be the type for your socket outlet, do not use an adaptor, but remove the plug from the lead and discard. Carefully prepare the end of the lead and fit a suitable plug. Please note the following information:-

IMPORTANT

As the colours of the wire in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:-

The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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STUDIOMASTER P7 MULTITRACK MIXING CONSOLE

INTRODUCTION

The Studiomastrer P7 multitrack mixing console is an expandable, eight-bus desk which offers all the flexibility and sonic integrity demanded of a modern studio mixer. All channels have individually switchable phantom powering and the EQ section is based on Studiomastrer's own classic circuitry, widely regarded as being particularly 'musical'.

Suitable for studio multitrack, live recording and sound reinforcement applications, the P7 features in-line monitoring combined with conventional, split grouping. This has the dual advantage that it is a familiar, standardised format, and at mixdown, the monitor inputs may be used as additional line inputs to accommodate sequenced MIDI instruments or further effects returns. The four-band equalisation may be split between the Input and Monitor Channels if required, while four stereo effects returns, each with two-band equalisation, are provided to avoid the need to use valuable Input Channels as effects returns.

A major feature of the P7 is the sophisticated MIDI muting system which employs 'soft switching to eliminate noise, distortion and switching clicks. Mute automation is available on all channels, monitors and effects sends while up to 100 Muting 'scenes' may be stored in the P7 to be recalled manually or via MIDI program change messages. Alternatively, the mute information may be recorded directly into an external sequencer. This provides a virtually unlimited number of mute operations and allows very precise editing of the mute information. Mute information is recorded as both note and velocity information and as controller information, the latter format enabling the mixer to assume the correct mute configuration, even if a song is started part way through.

Because most studio users have both mastering machines and cassette decks in their systems, provision has been made to connect two stereo machines and either to select between them or dub directly from one to the other. There are also two independent, switchable monitor outputs for use in studios that have both near-field and main monitoring systems.

The basic mixer may be extended in blocks of eight channels up to a maximum of 24 additional channels. These have been designed so that the user can fit them using simple tools, thus avoiding the need to return the P7 to a Studiomastrer dealer. The P7's power supply is designed to provide adequate current for a fully expanded configuration and maintains adequate cooling without the need for fan. This is particularly relevant in studios where fan noise can be unacceptably obtrusive.

IN-LINE FORMAT

Though in-line monitoring is rapidly becoming the rule rather than the exception, a few words of explanation are in order for the benefit of those brought up on split consoles or upgrading from all-in-one cassette multitracking systems. The monitor section in any console can be thought of as a mixer within a mixer, its main purpose being to allow the user to set up a cue or foldback mix for the benefit of performers executing overdubs. With most modern tape machines, the foldback mix is invariably fed from the multitrack tape machine's outputs, any switching between tape input monitoring and off-tape monitoring being handled by the tape machine itself.

On a conventional split console, the monitor controls are located to the right of the console, usually above the group faders, the maximum number of Monitor Channels usually being double the number of output groups. For example, a split console with eight output groups would only have a maximum of 16 monitor inputs. This limits the mixer to use with 16-track recorders, but the new generation of budget 24-track machines requires an approach that offers more Monitor Channels.

Instead of having a separate monitor section, an in-line console has its Monitor Channels built into the Input Channel strips. The extra controls mean the mixer is slightly deeper than a conventional split design, but the benefits far outweigh that minor inconvenience; the desk can be shorter, the number of Monitor Channels is always the same as the number of Input Channels, and at mixdown, the Monitor Channels may be utilised as additional line inputs with no need to repatch. This latter benefit is of particular value to those users who use MIDI sequencers synch'ed to tape or who need additional effects returns.

INSTALLATION

Before switching on, ensure that the power supply is set to the correct voltage for your area. UK and European models are fitted with a recessed slide switch on the rear panel of the PSU which may be set to either 220v or 240v. Power is supplied to the mixer via the locking multipin lead provided and full connection details are screened onto the rear of the PSU. In the event that the mains fuse blows, replace only with the type and value of the fuse as shown on the rear panel of the PSU.

The P7 should be installed on a flat surface such as a table or bench, though it may also be mounted on a keyboard stand. If the console is expanded by the addition of additional modules, then mounting on properly supported flat surface is recommended. The power supply should be positioned to allow a free flow of air over the ventilation grilles, and if rack mounting is adopted, it is recommended that at least 1U of rack space be left empty above the unit. It is also inadvisable to locate any 'hot-running' devices such as large power amplifiers directly below the P7's power supply.

All signal connections should be made using screened cable and lead lengths should be kept as short as is practical. Where possible, avoid running signal cables too close to mains cables or power adaptors and never run mains cables and signal cables in the same harness. Failure to adhere to this rule may cause background hum on the audio. If mains cables must cross signal paths, it is best if they do so at right angles.

In the event of a fuse failure, replace only with the same type and value of fuse. If a fuse blows repeatedly, contact your Studiomaster dealer for advice. The power supply is designed to be used with a mains earth so under no circumstances disconnect the earth cable.

PHANTOM POWER

Each Input Channel is fitted with its own Phantom Power switch labelled 48V. These switches are slightly recessed to prevent inadvertent operation. This provides operating power for capacitor microphones and those back-electret models designed to accept phantom powering. Unbalanced cables or microphones must NEVER be connected to a mic input with the Phantom Power switched on or damage could result. Balanced dynamic microphones do not require Phantom Power but will not be damaged if inadvertently connected to a channel on which the Phantom Power is active. If in doubt, check the microphone manual.

CHANNEL STRIP

The Channel Strips are all identical with the exception that the expander modules have no Group/Direct button below the Input Gain control. The Channel Strips house both the Input Channel Controls and the Monitor Channel controls. All the audio connections associated with the Channel Strips are located at the top of the console allowing for easy access should the console be used without the benefit of a patchbay. These comprise the connections to and from the multitrack tape machine, the Mic input, the Line input and the Insert send/return socket.

Unused tape inputs may also be used as line inputs which feed into the monitor section. Note: the Line inputs are not suitable for use with microphones or electric guitars (except active types). Conventional guitars and basses should be connected via an active DI box with a high input impedance to avoid tonal degradation due to impedance mismatching.

This section also includes the +48V Phantom Powering button which is recessed to minimise the risk of accidental operation. After switching on the global Phantom Power switch on the front panel of the PSU, Phantom power may be applied to individual channels by pressing in the latching red +48V button with a suitable instrument such as a small screwdriver, ball point pen or similar. Ensure that the Phantom Power is switched off on all channels that do not require it BEFORE plugging in any microphones.

INPUT SWAP: With this button in the up position, the console is configured for recording and overdubbing with the mic and line inputs being routed through the Input Channel controls and the multitrack tape outputs through the Monitor Channel controls. The insert point relates to the Input Channel signal path.

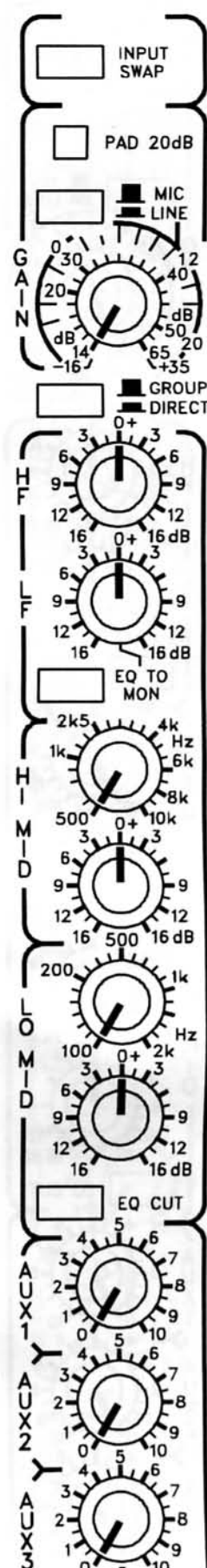
When it is time to mix the completed multitrack tape, the Input Swap button is depressed which, as the name suggests, swaps the Tape In and Line In connections. This has the effect of routing the recorded signals from the multitrack through the Input Channel leaving the Line input connected to the Monitor Channel controls. This provides a convenient means to add further line signal sources into the stereo mix. The mic inputs are still available in this mode, but are unlikely to be required during a conventional mixing session.

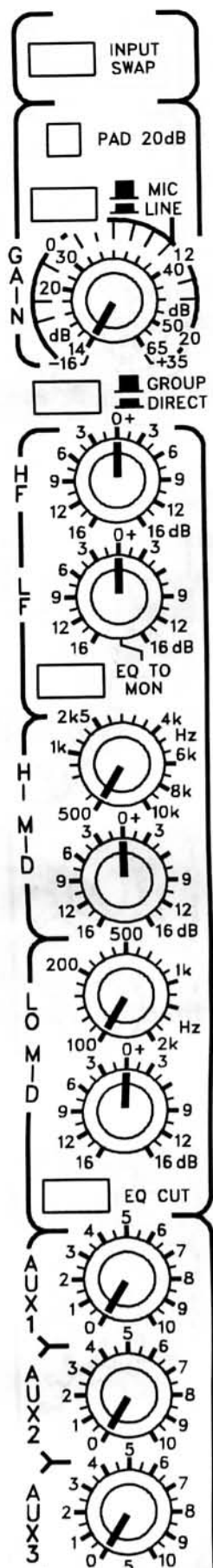
PAD: Attenuates the Mic Input by 20dB to prevent the mic amp overloading when sensitive microphones are being used very close to loud sound sources. Under most circumstances this will not be required, but may be necessary with close miked kick drums or brass.

MIC/LINE: Swaps between the Mic and Line Input. When mixing, this switch should be left set to Line.

GAIN: Sets the gain of the Mic or Line input as selected by the Mic/Line switch. When mixing, this control sets the level of the Tape In signal being fed into the channel. If the microphone signal is exceptionally high, the Pad switch may be used - see Pad.

GROUP/DIRECT: Fitted only to the main mixer channel and not to the expander modules. In the Group position, the Input Channel signals are fed to the eight output Groups via the routing buttons and Pan control in the usual way. If Direct is selected, the channel signal is routed directly to the Tape Out socket. Any other signals routed to this output via the normal Group arrangements will be disconnected. This feature is valuable when using tape machines with more than eight tracks as it provides a convenient means of routing





individual channels to tape, in addition to the more usual Group routing. For example, with a 16-track recorder, it might be logical to use the Direct outputs on channels 9-16 when overdubbing individual instruments or voices.

EQUALISATION

The P7 has a four-band equaliser comprising HF & LF and two sweep mids. In order to increase the flexibility of the in-line design, it is possible to switch the HF & LF equalisers into the Monitor signal path leaving the two sweep mids in the Input Channel path. This is valuable when mixing as it allows the equalisation to be deployed where it is most needed. The sweep mids are designed with a very wide range so that they can function as full-range controls when used without the HF & LF controls.

HF: Provides up to 16dB of boost or cut at 12.5kHz with a shelving response.

LF: Provides up to 16dB of boost or cut at 60Hz with a shelving response.

EQ TO MON: Switches the HF & LF equalisation into the Monitor signal path.

HI MID: The Frequency control is continuously variable from 500Hz to 10kHz providing a 'bell' response. Up to 16dB of Cut/Boost is available.

LO MID: The Frequency control is continuously variable from 100Hz to 2kHz providing a 'bell' response. Up to 16dB of Cut/Boost is available.

EQ CUT: Bypasses the Input Channel EQ but does not affect the HF & LF EQ if assigned to the Monitor Channel.

AUXILIARIES

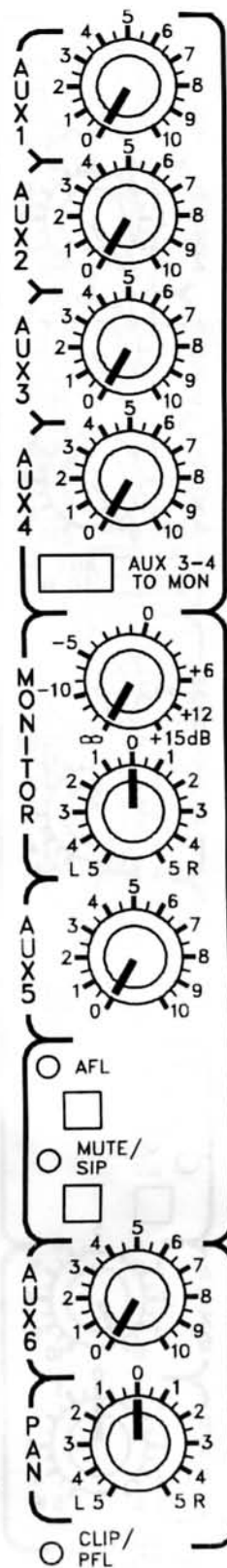
Like the equalisation, provision has been made to move some of the Aux capabilities into the Monitor signal path if required. Additionally, the Monitor signal path has one dedicated Aux send of its own. A unique feature is that Aux outputs 5 and 6 are automatically mixed together if no plug is inserted in the Aux 5 output socket which provides additional flexibility when setting up a performer's cue mix.

AUX 1,2: Dedicated post-fade effects sends; Input Channel only. These sends are muted when the Input Channel is muted.

AUX 3,4: Dedicated post-fade effects sends, switchable as a pair from the Input to the Monitor signal path. They are muted when the channel to which they are assigned (Input or Monitor) is muted.

AUX 5: See Monitor Section

AUX 6: Dedicated pre-fade foldback send for the Input Channel only. This send is muted when the Input Channel is muted.



MONITOR CONTROLS

MONITOR LEVEL: Controls the level of the signal being fed through the monitor signal path. During recording and overdubbing, this will normally be used to set up a cue mix, while at mixdown, it may be used to set the level of additional line inputs being fed into the stereo mix.

MONITOR PAN: Pans the Monitor signal left or right in the stereo mix. Note: The Monitor output is permanently routed to the L-R stereo mix.

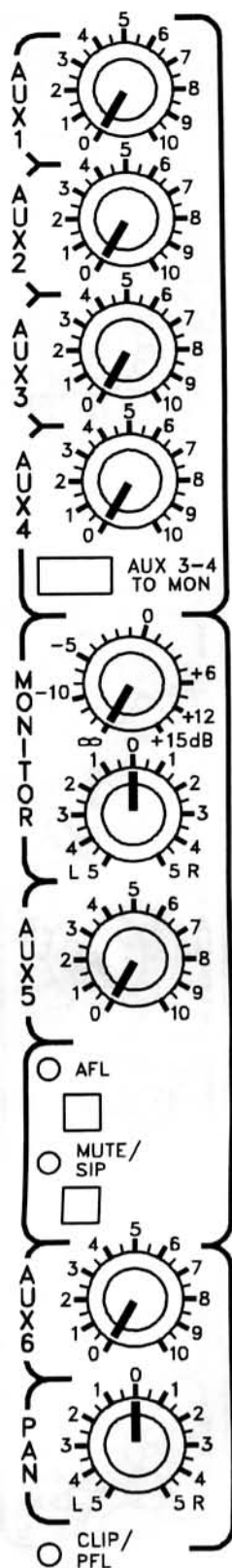
AUX 5: Dedicated post fade effects send for the Monitor Channel only. This send is muted when the Monitor Channel is muted.

AFL: After Fade Listen. When the AFL button is pressed, the Monitor Channel signal is routed to the PFL bus enabling it to be heard in isolation. This signal is affected by the Monitor Level control but is not silenced when the Mute is operated. Operating this control does not affect the main Stereo output or Group signals.

MUTE/SIP: When the console is in its normal Muting mode, these non-latching buttons activate and deactivate the Monitor Channel mutes. A muted channel is indicated by a yellow status LED. They also communicate with the MIDI muting system which is described in the MIDI MUTING section later in this manual.

If the console is set to SIP (Solo In place) mode, then pressing the Mute/SIP button causes all other channels to become muted unless they have been designated as 'Safe' allowing individual channels or combinations of channels to be checked in isolation. For a full description of the SIP system, see the SIP section of the manual.

Note: Unlike the AFL and PFL buttons which affect only the monitor outputs and not the main outputs, SIP also affects the main Stereo outputs and the Group outputs. It should only be used while setting up or for diagnostic purposes; under normal circumstances, it should not be used during a performance or during a mix.



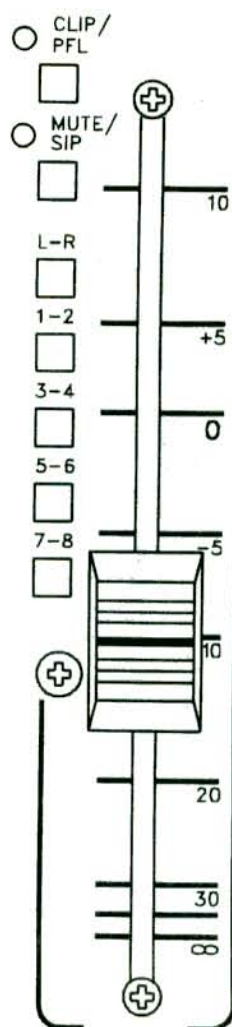
ROUTING

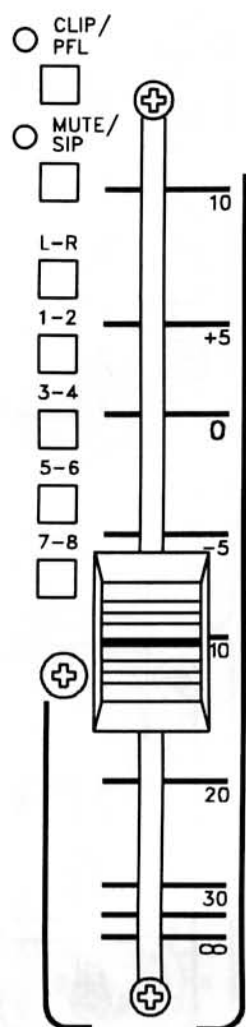
PAN: Determines the pan position of the Input Channel signal in the L-R mix and also works in conjunction with the Group routing buttons to steer the signal between odd and even numbered Groups. If the Pan control is set fully anticlockwise, the Input Channel signal is routed only to the odd numbered Group while if it is set fully clockwise, the signal is routed only to the even numbered Group. If the Pan control is set to its centre position, the Input Channel signal is fed equally to both the odd and even numbered Groups.

CLIP/PFL LED: The red LED illuminates when the Input Channel signal is in danger of clipping. If the PFL button is depressed, the LED displays the PFL status and does not function as a clip LED.

PFL: Pre Fade Listen: When the PFL button is pressed, the Input Channel signal is routed to the PFL bus enabling it to be heard in isolation. The CLIP/PFL LED now illuminates to indicate that PFL is selected and does not function as a clip indicator at this time. This signal is not affected by the channel fader setting and is not silenced when the Mute is operated. Operating this control does not affect the main Stereo output or Group signals.

MUTE/SIP: Operates in the same way as the Mute/SIP button in the Monitor section except that it relates to the Input Channel signal.





ROUTING BUTTONS

L-R: Routes the Input Channel signal to the main stereo mix bus via the fader and Pan control.

1,2: Routes the Input Channel signal to the Group buses 1 and 2. The Pan pot is used to steer the signal between odd and even numbered Groups.

3,4: Routes the Input Channel signal to the Group buses 3 and 4. The Pan pot is used to steer the signal between odd and even numbered Groups.

5,6: Routes the Input Channel signal to the Group buses 5 and 6. The Pan pot is used to steer the signal between odd and even numbered Groups.

7,8: Routes the Input Channel signal to the Group buses 7 and 8. The Pan pot is used to steer the signal between odd and even numbered Groups.

CHANNEL FADER: Long throw fader which controls the level of the signal passing from the Input Channel to the Group or L-R mix buses or to the Direct output. These signals will normally be sound sources when recording, and the multitrack tape machine's outputs when mixing. The fader has 10dB of additional gain above the 0dB (unity gain) position.

MASTER SECTION

Because the Master Section does not have to accommodate the Monitor Channels, it is surprisingly compact and uncluttered, yet still gives access to a host of powerful facilities including the MIDI Muting system, four stereo Aux returns with EQ and full routing facilities, Aux Send masters, Talkback and Oscillator functions, Monitor switching, Headphone output plus the Group and L-R faders.

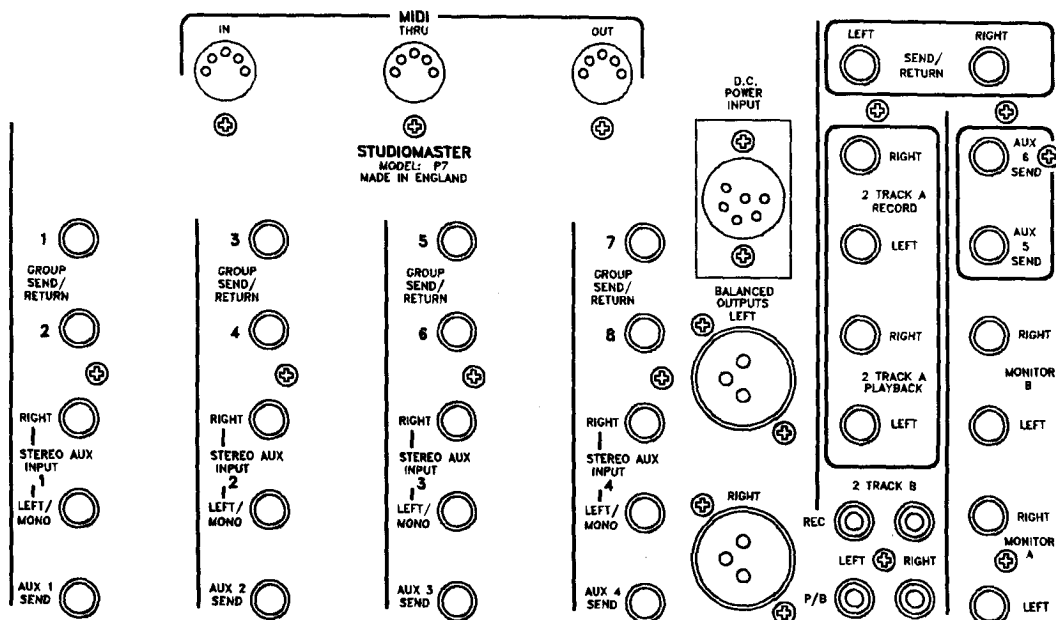
Ten, 16-segment, three-colour LED bargraph meters are provided, eight for the Group outputs and a further pair for the L-R stereo output. The Group meters have a VU response while the L-R meters have a peak response.

The Right meter also shows the PFL level of any channels selected for PFL monitoring which provides a simple method of optimising the input Gain control setting. With the appropriate PFL button depressed, gain optimisation is simply a matter of adjusting the channel Gain control until the PFL meter reads a nominal 0VU on signal peaks. Signal peaks should not be allowed to exceed +14dB.

CONNECTIONS

All the audio connection details relating to the P7 are clearly marked on the mixer itself along with details of the connector wiring. Further connection details are provided in the specifications section. All eight Groups, plus the main stereo (L-R) output are fitted with insert points on stereo jack wired Tip-send, Ring-return. Two sets of connections are available for connecting a stereo mastering tape machine, 2-Track A being on two-pole, quarter inch jacks and 2-Track B being on phonos to suit cassette or DAT machines. Further stereo outputs are also provided on balanced XLR connectors.

MASTER SECTION CONNECTION PANEL



The P7 has six Aux Send outputs corresponding to the six Aux sends located in the channel strips. There are four stereo Aux Returns which may be used as stereo line inputs if required. Two sets of monitor outputs are provided on unbalanced jacks allowing both main and near-field monitoring systems to be connected. The studio monitor level is varied by a single control so any desired difference in level between the two monitor outputs should be achieved using the level controls on the respective power amplifiers.

The Power Supply connects to the P7 via a locking 6-pin XLR connector. The headphone socket is located under the front edge of the mixer on the extreme right hand side.

MIDI In, Thru and Out connections are provided, the operation of which is fully described in the section on MIDI Muting.

AUX SENDS: Aux Sends 1-4 have level controls and MIDI mutes. Muting the Sends enables various creative tricks to be performed easily such as unmuting single words or phrases that are to be treated with echo or some other effect. There is also an advantage in muting unused sends as this helps reduce the noise from effects units.

Aux Sends 5 and 6 have level controls and AFL (After Fade Listen) buttons and are designed so that if nothing is plugged into Send 5, the Sends 5 and 6 are mixed together and appear at the Aux Send 6 output. The desired mix may be achieved by means of the respective Aux controls on the Input and Monitor channels. Aux Send 6 is designed to offer the most flexibility when used as a performers' cue mix.

AUX RETURNS: There are four identical Aux Return channels located directly below the Group output level meters. The controls are 'ganged' so that both left and right return signals are treated in an identical manner; a Pan control is provided which allows the L-R balance to be adjusted.

AUX RETURN GAIN: Sets the level of the stereo Aux Return signal.

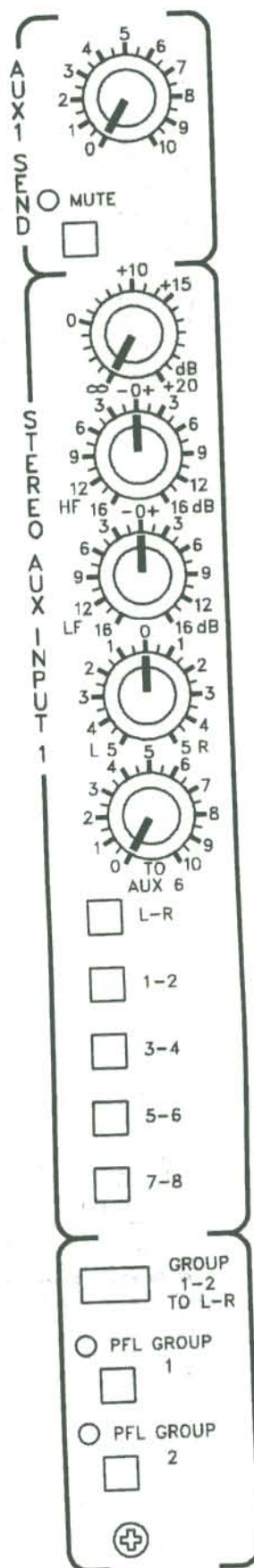
HF: Equaliser providing up to 16dB of cut or boost at 12.5kHz to the stereo Effects Return signal.

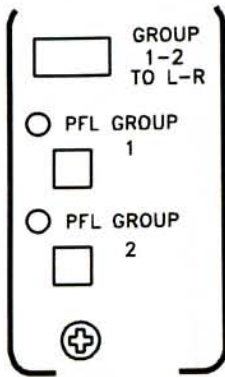
LF: Equaliser providing up to 16dB of cut or boost at 60Hz to the stereo Effects Return signal.

PAN: Adjusts the balance between the left and right Aux Return signals and handles odd/even routing when the signal is routed to the Groups.

AUX 6: Feeds the Aux Return signal to the Aux 6 output allowing, for example, reverb or other effects to be added to the performers' cue mix.

ROUTING BUTTONS: The Aux Returns have the same Group/L-R routing arrangements as the main Input Channels.





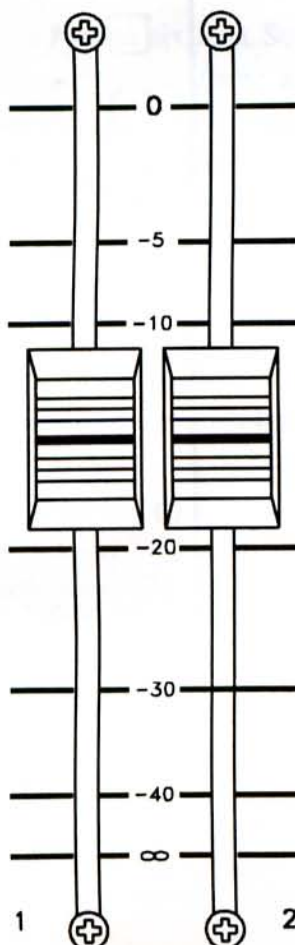
GROUPS

Each of the eight Group outputs is controlled by its own long throw fader with unity gain at the maximum fader setting.

GROUP 1-2 TO L-R: The Groups may be routed, in pairs, to the stereo L-R mix bus using the 'Group to L-R buttons' which enables stereo Subgroups to be created. This is valuable when mixing as logical groups of instruments or voices can be routed to a pair of Groups and then their combined level controlled by a pair of Group faders. For example, it is possible that a drum kit has been recorded on six or more tape tracks, but by routing all these to a single stereo Subgroup, the level of the whole drum kit can be controlled easily.

PFL GROUP 1 & 2: Each Group has its own PFL fader with active status LED. Selecting PFL solos the pre-fade group signal in the monitor and headphone outputs.

When channels are Subgrouped in this way, it is preferable to route the returns of any effects used to process these channels to the same stereo Subgroup. If this is not done, the level of any effects applied will not change when the Group faders are moved.



OSCILLATOR

The test oscillator is activated by means of the recessed Slate Osc switch and should be turned off when not in use. Ensure that the monitoring level is turned down before switching the oscillator on. The two fixed frequencies of 1kHz or 10kHz may be selected via the 10kHz/1kHz switch. For routine signal tracing and slate tones, the 1kHz frequency is adequate, but a 10kHz tone is included allowing the user to test the HF response of tape machines and to confirm head azimuth alignment.

The test oscillator follows the routing of the Talkback section.

TALKBACK

An integral electret mic enables the engineer to talk directly to the Aux 6 foldback output or to place voice messages such as track IDs (Slate) on the multitrack tape via the Group outputs. If the Group to L-R buttons are selected, the Talkback signal can be routed to the main stereo output as well.

TO SLATE: Routes the talkback mic to the Group outputs. This switch is non-latching.

TO AUX 6: Routes the talkback mic to the Aux 6 bus which is normally used to provide a studio cue mix. This switch is non-latching.

PFL: Sets the level at which any PFL'd or AFL'd signals are heard over the studio monitor system allowing a balance between the PFL and normal monitoring levels to be achieved. When the control is set to the Cal position, the PFL signal will be heard at its actual level.

2 TRACK

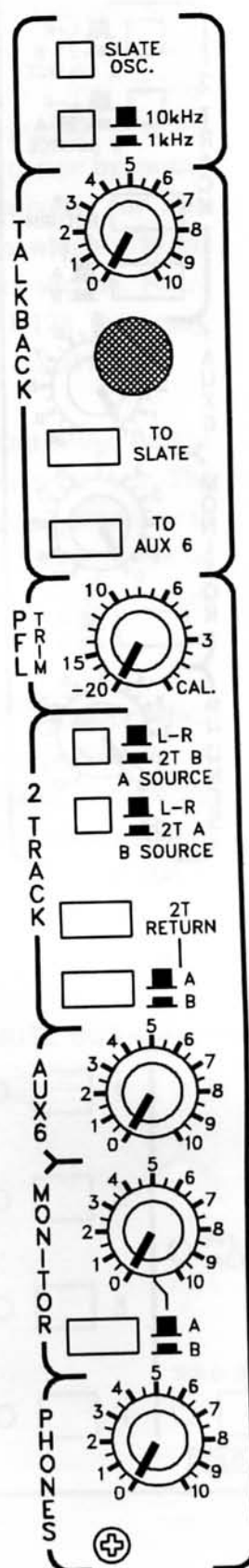
The 2-Track section allows either of the two possible stereo tape machines to be replayed through the studio monitor system and also allows copying from one stereo machine to another.

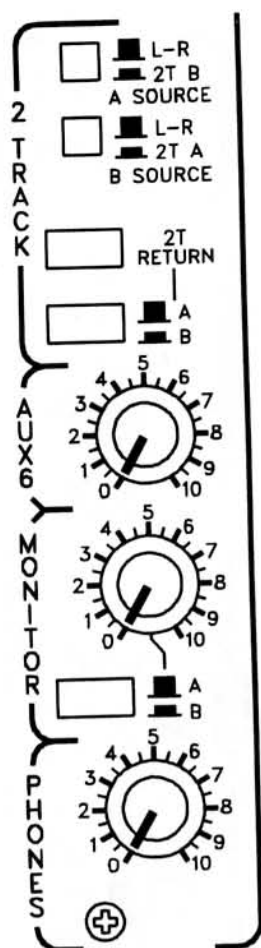
A SOURCE: When this button is up, the stereo tape machine connected to output A receives its input from the main stereo output of the mixer.

When this button is down, tape machine A receives its input from the output of tape machine B. This position is used for dubbing from one tape machine to another.

B SOURCE: When this button is up, the stereo tape machine connected to output B receives its input from the main stereo output of the mixer.

When this button is down, tape machine B receives its input from the output of tape machine A. This position is used for dubbing from one tape machine to another.





2T RETURN: Selects either the main stereo mix or the output of the designated stereo tape machine to be played over the studio monitors. When up, the L-R mix is selected; when down, the 2-Track is selected according to the status of the 2T RETURN A,B switch .

2T RETURN A,B: Selects either stereo tape machine A or B to be played back over the studio monitor system when Return is depressed.

MONITOR

TO AUX 6: Mixes the studio monitor output into the Aux 6 Send signal. This provides an easy way to send the performers the control room mix to use as a cue mix when a specially balanced cue mix is unnecessary.

MONITOR: Master level control for the control room monitoring system.

A,B: Routes the control room monitor signal to monitor outputs A or B. These would normally be used to feed the control room monitoring system, two alternative outputs being provided to facilitate switching between main and near-field monitoring systems.

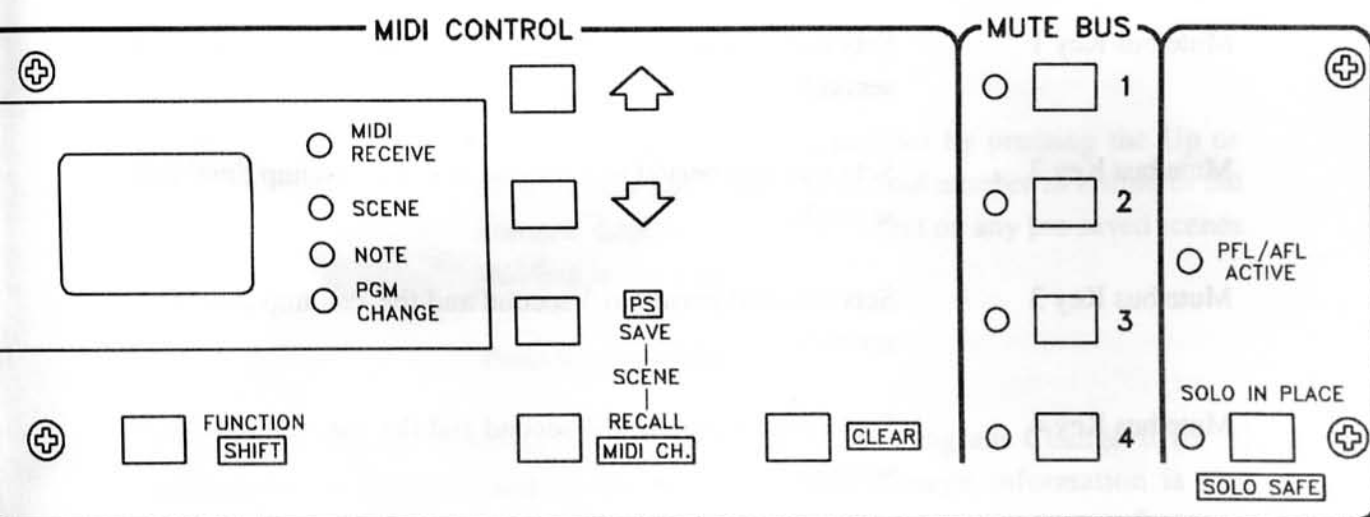
PHONES: Level control for the stereo headphone socket. The headphone signal is always the same as the control room signal.

MIDI MUTING

The MIDI Muting system employed in P7 is immensely flexible, yet is extremely user-friendly. It may be used as a stand-alone feature allowing the user to manually step through up to 100 'Scenes', (a Scene being the mute status of the entire desk at any given time), or it may be used with an external MIDI sequencer to provide a more sophisticated and automatic muting system. A MIDI sequencer locked to tape by means of a synch'ing device provides the maximum flexibility. Alternatively, for less demanding work, it is possible to set up four mute configurations which may be accessed directly using the four Mute Bus keys in the MIDI Control section. Note: Because some MIDI devices use program numbers 0-127 and others 1-128, there may be a discrepancy of 1 between the program number sent and the Scene called up.

MIDI In, Thru and Out sockets are fitted to the console, the MIDI Out being used to convey MIDI Mute information generated by the console to an external sequencer. The MIDI In socket is used to replay Mute information from an external sequencer or to select Scenes using MIDI program numbers in the range 1 - 100 (or 0 to 99) from an external MIDI device. The MIDI Thru output is used to 'daisy-chain' MIDI devices together and merely provides a copy of the MIDI input information.

In addition to the normal muting operation, there is a Solo In Place or SIP mode which acts in exactly the opposite way to muting; pressing a Mute/SIP in this mode mutes all other input channels and monitors except any that have been set to 'Safe'. The concept of Solo Safe comes from larger, professional studio mixers where it is often desirable to be able to Solo a signal without muting the output from any effect units that may be assigned to it.



MIDI CONTROL SECTION

SETTING THE MIDI CHANNEL

The P7 can be configured to operate on any of the 16 MIDI channels or the MIDI function may be disabled altogether. Also during this mode, the controller information transmitted and received by the P7 may be defined.

To enter the MIDI function mode:

- * Press Function/Shift and Recall/MIDI Ch keys simultaneously.
 - * Use the Up/Down arrow keys to step through the available MIDI functions as follows:
 - MIDI Off
 - 01 MIDI Channel 1
 - 02 MIDI Channel 2
 - and so on up to -
 - 16 MIDI Channel 16
 - Cx MIDI Controller Setting
- (x denotes Controller mode: 1,2,3,4 or off "-")

When setting the controller mode, once Cx appears in the display, five extra keys may be used to determine the mode as follows.

Mute Bus Keys 1 - 4 enable the P7 to transmit and receive MIDI controller codes.

- | | |
|----------------|--|
| Mute bus Key 1 | Sets transmit period to 1 second and the 'catchup time' to 3 seconds. |
| Mute bus Key 2 | Sets transmit period to 2 second and the 'catchup time' to 5 seconds. |
| Mute bus Key 3 | Sets transmit period to 3 second and the 'catchup time' to 7 seconds. |
| Mute bus Key 4 | Sets transmit period to 4 second and the 'catchup time' to 9 seconds. |
| Clear | Disables the MIDI controller function which stops the P7 from transmitting or receiving MIDI controller codes. |

To exit the MIDI function mode:

- * Select the desired MIDI channel number using the Up/Down arrow keys.
- * Press Save to store the MIDI mode settings and return to the current Scene.

SCENES MODE

To create a Scene:

- * Select the required scene number by pressing the Up or Down arrow keys until the desired number is visible in the numeric display. The display will flash at this point to indicate that the selected Scene has not yet been loaded for use. (Until this is done, the previous Scene will remain in operation.)
- * Depress the required Mute buttons; the yellow Mute LED is on when a channel, monitor or aux send is muted.
- * Press the PS/Save key.
- * Repeat the procedure for other Scenes up to a maximum of 100.

To recall a Scene:

- * Select the required Scene number by pressing the Up or Down arrow keys until the desired number is visible in the numeric display. This has no effect on any pre-saved scenes residing in memory.
- * Press the Recall key.

Scenes may also be selected via MIDI where MIDI Program Change 0 (or 1) corresponds to Scene 0 and so on. MIDI Program Change information is also transmitted by the P7 whenever the Load button is pressed to switch to a new Scene.

To clear the console of Mutes, press the Function/Shift and the Clear keys together. This has no effect on the previous Scene which still resides in memory.

MUTE BUS

For simple jobs, the Mute Bus Keys allow four mute scenes to be set up and recalled at the push of a button.

To program a Mute Bus Key:

- * Press the required Bus Key; the key number will be shown on the display as b1, b2, b3 or b4.
- * Set the desk Mutes as required.
- * Press the Mute Bus Key again to store the Scene. The Mute status will now revert to the last Scene. Note: MIDI transmit and receive is inhibited in this mode.

To recall one of the four Mute scenes, simply press one of the four Mute Bus Keys.

SOLO IN PLACE (SIP)

This mode is entered by pressing the Solo In Place key at which point the display shows 'So'. Now, when any Mute/SIP button on the console is depressed, all the other channels on the desk will be muted while the selected channel remains active.

Note: this does not apply to the Aux Sends. The channel number of the Solo'd channel will be shown in the display window, and if it is a Monitor Channel, a decimal point will be displayed following the number.

Pressing the Mute/SIP button of the Solo'd channel again cancels the Solo function while pressing the Solo In Place button in the MIDI Control section exits the Solo mode and returns to the normal operating mode.

SOLO SAFE

Used in conjunction with Solo In Place, Solo Safe allows specific channels to be prevented from muting by designating them as Safe. The facility is commonly used to allow effects to remain active when a channel is Solo'd, but any Input Channels or Monitor Channels may be selected normally. The effects sends are not normally muted when SIP is active but may be configured so that they are.

To Set Solo Safe:

- * Enter Solo Safe mode by pressing the Function/Shift key and the Solo Safe Key simultaneously.

- * Unless some channels have already be set up as Safe, all the Mute/SIP LEDs will come on, and any channels required to be made safe should be de-selected by pressing their Mute/SIP buttons. The Aux Sends default to Solo Safe.
- * Press the PS/Save key which will store the Safe settings and return to the last Scene.
- * Next time the SIP function is used, the selected Safe channels will not be muted.

Note: When the P7 is switched off, the Solo Safe status is not retained in memory. When the P7 is powered on, it will default to all Input channels plus Monitors muted and the Aux Sends active.

PI NUMBER SECURITY SYSTEM

The P7 has an inbuilt security system which prevents unauthorised use of the mixer and renders the mixer unusable if it is stolen. The system uses a four-digit code which is factory set to 1111 overriding the security feature. Every time the mixer is powered up, the required code must be punched in before the channels can be unmuted unless the security feature has been deactivated by setting the PI number 1111.

To enter a PI number, proceed as follows:

- * Press the Function Shift and PS/Save keys simultaneously. The display will now show PS.
- * Any four digit code can be entered by pressing the four Mute Bus keys and this code will be remembered when the mixer is powered down.

To activate the mixer on power up:

- * On power up, the display will show PI which means that a PI number must be entered.
- * Enter your four digit PI number; after a few seconds, the console lights will flash (indicating initialisation), and the normal operating mode will be entered.

Note: Up to three attempts may be made to enter the correct PI number. After three incorrect entries, the mixer will lock out for two hours with all mutes on and the four Mute Bus LEDs flashing. To disable the PI function, enter a PI number of 1111.

USE WITH AN EXTERNAL SEQUENCER

When an external sequencer is used, the Mute data from the P7 is represented in two forms, the reason for which will shortly become apparent. Whenever a Mute switch is operated, a MIDI Note On message is transmitted closely followed by a Note Off. A Mute on is represented by a note velocity of 96 while a Mute off has the velocity 32.

Note: Some sequencers convert Note Off messages to a Note On message with a velocity value of 0 which, if interpreted literally would cause the console to unmute directly after muting. To get around this, the P7's software is designed to ignore Note On data with velocity 0.

If this MIDI note data is stored on a sequencer and later replayed, the P7's Mute status will change accordingly. The mute data may be built up over several passes and the note data merged or edited as desired.

For many applications, this mode of working is perfectly satisfactory, but on its own, it suffers from the drawback that if the sequencer is started part way through a song, the Mute status of the desk will be incorrect. To get around this limitation, the P7 also encodes the Mute information as Controller Dumps that are sent from the MIDI Out socket every second (or as set by the user) and may also be recorded onto a sequencer.

When the sequencer is started, it will send out a MIDI Start message or MIDI Continue message depending on whether the song has been started from the beginning or part way through. On receiving this command, (assuming the default settings) the P7 'expects' to receive a Controller message within one second, and continues to 'look' for between two and three seconds. If the Controller message is received, it updates the console mute states, regardless of whereabouts in the song the sequencer was started.

If no Controller message is received during this period, the console state will remain unchanged until fresh MIDI note information is received. This system of updating the console Mute information is roughly analogous to the way MIDI Song Position Pointers are used to start MIDI sequencers at the correct place when using MIDI-to-tape sync systems.

Note: If the user does not wish to use the Controller information, it can be filtered out at the sequencer either while recording the sequence data or while playing it back. Alternatively, the Controller data may be turned off within the P7. For use with sequencers having limited memory capacity, lower rates of controller information may be selected.

If it is necessary to tidy up the mute information by editing, this can be achieved using the editing functions of the sequencer being used to move or change the MIDI Note information. However, if the editing is extensive or additional muting information is being added on other sequencer tracks, the stored Controller information may become outdated. In this case, new Controller information can be generated as follows:

- * Record the Mute data to the sequencer.
- * Edit the Note data as required by moving or changing the MIDI Note information.
- * Set the sequencer to filter all control data from the MIDI output.
- * Play the song through from the start while simultaneously recording the MIDI output from the P7 onto another sequencer track. The P7 will now generate only updated Controller, not Note, information.
- * Merge the MIDI Note data and Controller information on the sequencer..

MIDI IMPLEMENTATION CHART

NOTE OFF

Format: 8nH,cc,00H
n = MIDI Channel Number 00H - 0FH (1 - 16)
cc = Console Channel Number 24H - 77H (1 - 84)

Note: This code is only transmitted

NOTE ON

Format: 9nH,cc,vv
n = MIDI Channel Number 00H - 0FH (1 - 16)
cc = Console Channel Number 24H - 77H (1 - 84)
vv >= 40H (64) - channel is muted
0 > vv < 40H (64) - channel is unmuted

Note: Note On codes with a velocity of zero are interpreted as Note Off commands and, as a consequence, are ignored.

CONTROL CHANGE

Format: BnH,bb,cm
n = MIDI Channel Number 00H - 0FH (1 - 16)
bb = Block Codes 40H - 4BH (64 - 75); see table
cm = Channel Mutes 00H - 7FH (0 - 127); see table

CONTROL CHANGE TABLE

bb	Channel Mutes
40	1 - 7
41	8 - 14
42	15 - 21
43	22 - 28
44	29 - 35
45	36 - 42
46	43 - 49
47	50 - 56
48	57 - 63
49	64 - 70
4A	71 - 77
4B	78 - 84

Note: Controller commands are only accepted for the 2-3 second 'catch-up' period after a start or continue command has been received by the console unless one of the alternative 'catchup' times has been selected.

PROGRAM CHANGE

Format: CnH,ss
n = MIDI Channel Number 00H - 0FH (1 - 16)
ss = Scene Number 00H - 63H (0 - 99)

START

Format: FAH

A Start command is used to initiate a 2-3 second 'catch-up' period during which controller changes are accepted to update the current state of all channel mutes.

CONTINUE

Format: FBH

A Continue command is used to initiate a 2-3 second 'catch-up' period during which controller changes are accepted to update the current state of all channel mutes.

Note: The 2-3 second 'catch-up' period after a start or continue command has been received applies unless one of the alternative 'catchup' times has been selected.

OPERATING LEVELS

The XLR stereo outputs are fully balanced and operate at the professional +4dBu signal level. They are wired conventionally: pin 1 screen, pin 2 hot, pin 3 cold. For unbalanced operation, connect pins 1 and 3 to the screen and use pin 2 for the signal. This automatically adjusts the signal level for +4dBu unbalanced.

Multitrack Input and Outputs

These are configured to match equipment working at the -10dBv operating level commonly adopted by the manufacturers of semi-professional recording equipment. For use with equipment operating at +4dBu, there is a simple modification which can be undertaken by your dealer.

To change the Tape Output level from +4dBu to -10 dBv: Locate the input channel circuit card, remove resistor R53 and fit a link across R53. The resistors are located directly below the Tape In and Out jack sockets.

To Change the Tape Input level from +4dBu to -10 dBv: The console can handle a +4dBu signal by turning down the Input Gain control. However, the gain structure of the Tape Monitor path will be compromised to some extent and a more satisfactory option is to make the necessary component change to revise the operating level.

Locate the input channel circuit card and remove resistor R110 which is adjacent to IC1. This will reduce the gain in the Monitor path only.

Two-Track Input and Outputs

This is a simple modification which can be undertaken by your dealer.

The relevant components are located on the Left/Right Monitor pcb, just below the Two-Track Source switches. The input level Adjustment is common for both Two-Track A and B inputs, although the output levels may be set individually if required.

Two-Track A and B Input: Remove resistors R101 and R105.

Two-Track A Output: Remove resistors R94, R96 and link across R93 and R95.

Two-Track B Output: Remove resistors R98, R100 and link across R97 and R99.

NOTE: ANY DAMAGE TO CONSOLE CAUSED BY THIS MODIFICATION BEING CARRIED OUT BY UNAUTHORISED PERSONNEL WILL NOT BE COVERED BY THE WARRANTY.

TECHNICAL SPECIFICATION

GAIN

	Min	Max	Max Gain to L-R Out
Mic	+14dB	+65dB	75dB
Line	-16dB	+35dB	45dB
Monitor	-50dB	+15dB	24dB
St Aux Ret	-60dB	+20dB	20dB
Mic Pad	20dB attenuation		

Common Mode Rejection Ratio, Mic Input (max gain) -99dB at 1kHz

Frequency Response Mic/Line input to any output 20Hz to 20kHz +0/-0.3dB

Total Harmonic Distortion (Mic in to Left/Right output) 0.008% at 1kHz

NOISE

Mic Equivalent input noise -128dB (A wtd)

Line Equivalent input noise -93dB (A wtd)

L-R Bus (Monitors on and Channels routed) -86dB

Groups (16 channels routed) -86.8dB

Aux Bus 1 to 6 (unity gain) -86dB

Signal to Noise

16 Monitors on, 16 channels routed at unity gain 79dB

Dynamic Range

16 Monitors on, 16 channels routed at unity gain 100dB

CROSSTALK (1kHz)

Input Channel Mute Switch -106dB

Routing Switch Isolation to Groups -94dB

Routing Switch Isolation to L-R -81dB

Input Aux Sends 1-6 Attenuation -86dB (typ)

Pan Control Separation at 1kHz -60dB

Mic/Line Switch Isolation 99dB

Line/Mic Switch Isolation 132dB

Fader Attenuation 78dB

EQUALISATION

All EQ provides 16dB of cut or boost

Input Channel

HF

12.5 kHz; shelving

HMF

500Hz - 10kHz; Q = 1.6

LMF

100Hz - 2kHz; Q = 1.6

LF

60Hz; shelving

Stereo Aux Returns

HF

12.5 kHz; shelving

LF

60 Hz; shelving

MAXIMUM INPUT LEVELS

Mic

Mic + Pad

+7dB

Line

+27dB

Monitor

+36dB

+11dB

INPUT IMPEDANCE

Mic

Line

2k ohm

Monitor

10k ohm

Send/Returns

180k ohm

Two-Track Returns

4k ohm

5k ohm

OUTPUT LEVELS

Channel Send/Return

Nominal

Maximum

Group Send/Return

+4dBu

+21dBu

L-R Send/Return

+4dBu

+20dBu

Aux Send 1 - 4

+4dBu

+20dBu

Aux Send 5 - 6

+20dB

Output Levels Cont.

+20dB

Left, Right & Groups

10dBv

+7dBV

(+9dBu) (Adjustable to +4dBu)

Control Room Monitors

+20dBu

Headphones (8 ohm min) 1 Volt (125 mW)

MISCELLANEOUS

Clip LEDs Illuminate 4dB prior to clipping
Meters 16-segment, three colour LED (Groups set for VU response
 - L-R set for peak response)

DIMENSIONS

Console (WxHxD) 818mm (32.2") x 120mm (4.7") x 770mm (30.3")
Expander (WxHxD) 270mm (10.6") x 120mm (4.7") x 770mm (30.3")

EXTERNAL PSU

The P7 is supplied with a rack-mounting power supply capable of powering the P7 and up to three expander units (40 channels max). The PSU does not require fan cooling but must be mounted so as to allow good ventilation.

The unit is supplied with a 2 metre DC cable with a 6-pin XLR connector at either end. Additional cables are available to extend the original cable in multiples of 2 metres.

Size: 2U Rack mounting (482 x 88 x 134mm) (19" x 3.5" x 5.2")

EP5 240/220 volt operation, selectable on rear panel. 50Hz/60Hz, 150VA max. AC fuse T2A 250V, 20 x 5mm.

EP5U 120 volt operation only. 60Hz, 150VA max. AC fuse 3A 250V, slo-blow, 1.25" type.

CONNECTION PROTOCOL

Mic Inputs and main stereo outputs: XLR wired pin 1 screen, pin 2 hot, pin 3 cold.

Line Inputs and Outputs: Unbalanced jack.

Insert Points Stereo jack wired tip-send, ring-return.

Phones: Stereo jack, tip-left, ring-right.

Power: Locking 6-pin XLR.

WARNING

Studiomaster can accept no responsibility for damage to the mixing console resulting from connection to an inappropriate power supply or from fitting fuses of values other than those specified. Unauthorised repairs or modifications to the console will nullify the warranty. The warranty does not cover damage resulting from the connection of faulty or incompatible equipment to the console.

Should your console develop a serious fault, do not attempt to rectify it yourself.

Service work should only be carried out by qualified and experienced service engineers. For this work to be done, consult the dealer who supplied the console,

or contact:-

The Service Department

STUDIOMASTER

Studiomaster House

Chaul End Lane

Luton

Beds LU4 8EZ

England

Tel (0582) 570621

Fax (0582) 494343

Or in the USA :-

STUDIOMASTER INC.

3941 E.Miraloma Avenue

Anaheim

CA 92807

USA

Tel (714) 524 2227

Fax (714) 524 5096

The contents of this manual are correct at the time of going to press.
The manufacturer reserves the right to change specification and features without prior notice.

FITTING THE EXPANDER MODULES

The P7 expander modules are configured as blocks of eight of channels which, other than the omission of the Group/Direct button, are identical to the channels on the P7 console. Installation is very straightforward and can be carried out using only a cross-head screwdriver and a 2BA socket or open-ended spanner. The procedure is as follows.

- * Disconnect the console from the power supply and place on a flat surface large enough to support it and the additional expander modules when fitted; the floor is ideal.
- * Remove the right hand end cheek from the mixer by unscrewing the three cross-head retaining screws. This will reveal the connectors that mate with the connectors on the expander unit(s).
- * Remove the expander module (the section with the grey paintwork) from its case (the section with black paintwork) by removing all the cross-head screws located around the edge of the grey mixer panel. These are located down the sides of the panel, beneath the armrest and at the back of the module (13).

If more than one module is to be fitted, repeat for the additional modules.
- * Place the module casework alongside the right hand side of the P7 console and fix it to the end panel of the console using the eight 2BA, half inch hex bolts and shakeproof washers provided. These align with the threaded inserts in the mixer's end panel.

If more than one module is to be fitted, repeat the exercise, fixing the module casework to the right hand end of the previously fixed module.
- * Refit the module or modules starting with the one furthest from the console. If all three expanders are added, these are numbered 1, 2 and 3 with module 1 being the one nearest the console. In other words, if there are three expander modules, refit module 3 first. This is necessary because two of the three cables from module 3 must pass beneath

modules 1 and 2 in order to reach the console.

* Remove the elastic band from the ribbon cable nearest the top of the module and extend the cable. Plug this into the correspondingly numbered ribbon cable at the top of the console. The connectors are fitted with locator keys so eliminate the possibility of them being connected backwards.

* Unwrap the green earth cable near the centre of the module and plug this into any of the green earth cables protruding from the console.

* Ribbon cables also protrude from both the left and right sides of the expander modules, about half way up the module. The right hand connector is not used on the rightmost expander module and will eventually be covered when the end-cheek is refitted.

The cable emerging from the left hand side of the module connects to the cable emerging from the right hand side of the adjacent module or, in the case of module 1, the console itself.

* When all the connections have been made and the modules placed back inside their cases, refit all the securing screws and fit the end cheek.

* Cut the self-adhesive scribble strip to suit the expander(s), remove the backing and fix to the console.

Studiomaster can accept no responsibility for damage to the mixing console resulting from unauthorised repairs or modifications. If in any doubt as to your ability to fit the expander modules, consult your dealer.